



Review on  
Antimicrobial  
Resistance

*Tackling drug-resistant infections globally*

21 June 2016 PACCARB Public  
Meeting – Incentives for new antibiotics

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@ReviewOnAMR

wellcome trust



# Background about the Review on AMR

- Established in 2014 as independent arms length group by the UK Prime Minister, co-sponsored by the Wellcome Trust.
- Chaired by Jim O'Neill now a Minister in the UK Treasury.
- Tasked to recommend solutions to tackle antimicrobial resistance globally – through the lens of economics and policy-making.
- Mandate to build international consensus for action.
- Published seven interim papers before final report in May 2016 – [www.amr-review.org](http://www.amr-review.org) .

# We recommended actions across ten areas

Most actions are to reduce demand for antimicrobials

Today I focus on antimicrobial pipeline only



Public awareness



Sanitation and hygiene



Antibiotics in agriculture and the environment



Vaccines and alternatives



Surveillance



Rapid diagnostics



Human capital



Drugs



Global Innovation Fund



International coalition for action

# Which antimicrobials ? What are the priorities?

- What our report said:

**Urgent need and current funding structures inadequate**

- TB treatment regimen
- Antibiotics
- Antifungal medicines

**Urgent need but current funding structures largely adequate**

- New malaria treatments

**Need will arise and require future consideration**

- HIV/AIDS drugs

- Future work needed to set national and global priorities, in particular for antibiotics : grant funding and new commercial incentives should focus on highest needs (CDC urgent list and ESKAPE pathogens are a good start).



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# “Push” incentives are necessary

- History of under-investment in AMR

## US National Institute for Health research spending 2010–2014



- Current programmes start to correct to the trend :
- Good examples are NIH, BARDA and EU IMI grant programmes.
- Smaller scale but possibly promising: GARD in Geneva, a new product development partnership focused on antibiotic R&D, with a look to low hanging fruits first; UK-China Global Innovation Fund with ~US\$140 million to start.
- Need to sustain and increase these efforts.

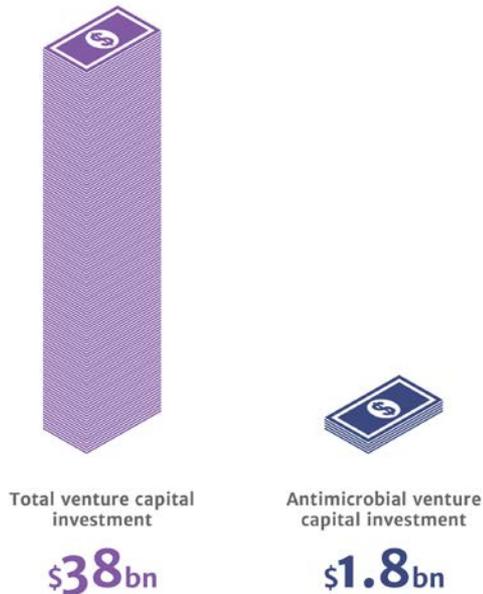
# Current “Push” incentives show good progress but are not sufficient

- More and different approach to push funding is needed to fill the “gaps in basic research that hamper antibiotic discovery” ([Pew scientific roadmap](#))
- Are we sure we are picking the low hanging fruit?
- Are we getting greatest impact from Government funding or do we tend to focus resources on same kind of research and institutions?
- How does push funding relate to stewardship goals? What about access?
- One of key lessons from two years of the Review on AMR is that government and philanthropic funding is key and can be high impact but without a functional commercial market it stops short of translating into effective new products and does not solve the ‘stewardship’ paradox for antibiotics.

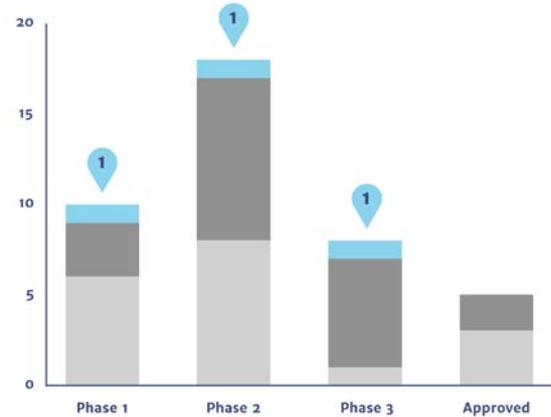


# “Pull” incentives for antibiotics are necessary

Less than 5%  
of venture capital investment in pharmaceutical  
R&D between 2003 and 2013 was for  
antimicrobial development.



## ANTIBIOTICS IN THE PIPELINE OR RECENTLY LICENSED



### High priority

Potential for activity against at least 90% of carbapenemase-producing bacteria in the UK

### Low priority

Does not meet the criteria for "clinically useful"

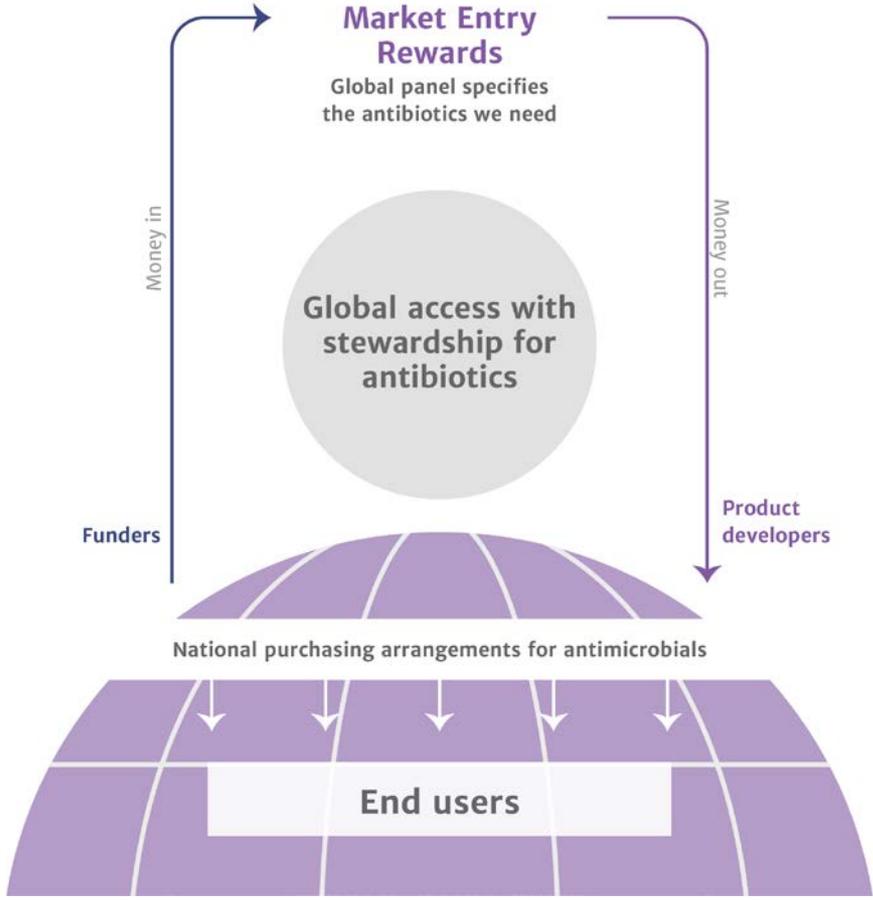
### Medium priority

Targets at least one CDC 'Urgent' threat (*Clostridium difficile*, carbapenem-resistant Enterobacteriaceae or drug-resistant *Neisseria gonorrhoea*, but is not classed as a potential break through)

Source: Renwick MJ, Simpkin V, Mossialos E, International and European Initiatives Targeting Innovation in Antibiotic Drug Discovery and Development, The Need for a One Health – One Europe – One World Framework, Report for the 2016 Dutch Presidency of the European Union.



# Our proposal for a global incentive that co-exists with diverse national arrangements



# “Pull” incentives today are very insufficient

- Current attempts at correcting the market failure for antibiotics R&D are a start but fall short of being effective:
  - Scattergun approach;
  - Not focusing scarce public resources on highest areas of public health needs;
  - Lack of coordination between countries could have unintended consequences.
- We thought long and hard in the Review about a range of possible incentives. Important that other groups continue that work and get into more details.
- Market entry rewards emerged as the best incentive in our view.
- Key consideration is to level the playing field and open competition to more players.
- Stewardship and access are not intractable – can be managed in this system. A lot of public health programmes in the past 10 years shows us the way (GAVI, CHAI etc.).
- Now we need serious government discussion of financing.



# Market entry rewards would have a powerful impact on antibiotic R&D given the size and shape of the current yearly global market

Patented antibiotics form a small percentage of the total \$40 billion per year antibiotics market, so \$1.6 billion a year would have a material impact.



**\$4.7 bn**

**Patented  
antibiotics market**



**\$1.6 bn**

**Market entry  
reward**

Data and analysis by IMS Health, in the countries they had patent data for only 12.3% (\$3.8bn) of sales were on patent while \$26.9bn were off patent. We then presumed that this ratio remained the same in the 20% of countries they did not have patent data for, even though these countries tend to buy less patented drugs, making the above figures a high estimate of the patented market.